

WHAT IS CLAIMED IS

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1. A semiconductor device, comprising:
a semiconductor chip;
a heat dissipation member for dissipating
heat generated by said semiconductor chip; and
10 a coupling member which thermally couples
said semiconductor chip to said heat dissipation
member,
wherein said coupling member is made of
metal and deformable to absorb a stress generated
15 between said semiconductor chip and said heat
dissipation member, said coupling member and said
semiconductor chip being joined through metal-metal
bonding.

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2. The semiconductor device as claimed in
claim 1, further comprising a metal layer formed on
25 said semiconductor chip in a place where said
coupling member is joined to said semiconductor chip
through the metal-metal bonding.

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3. The semiconductor device as claimed in
claim 1, wherein said coupling member includes a
plurality of posts that are deformable.

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4. The semiconductor device as claimed in
claim 3, further comprising an organic material
filling gaps between said posts.

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5. The semiconductor device as claimed in
10 claim 4, wherein said organic material is mixed with
an inorganic material, the mixture of said organic
material and said inorganic material having a
coefficient of thermal expansion between a
coefficient of thermal expansion of said
15 semiconductor chip and a coefficient of thermal
expansion of said heat dissipation member.

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6. The semiconductor device as claimed in
claim 3, wherein said posts have varying lengths,
which are longer at a perimeter than at a center of
said coupling member.

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7. The semiconductor device as claimed in
30 claim 3, wherein said posts have varying cross-
sectional areas, which are smaller at a perimeter
than at a center of said coupling member.

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8. The semiconductor device as claimed in

claim 3, wherein said posts arranged with varying layout density, which is lower at a perimeter than at a center of said coupling member.

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9. The semiconductor device as claimed in claim 1, wherein said coupling member is integral 10 with said heat dissipation member.

15 10. A method of making a semiconductor device, comprising the steps of:

making a coupling member by forming posts on a substrate;

20 forming a metal layer on a back surface of a semiconductor chip;

pressing said posts against said metal layer while filling a resin material between said coupling member and said semiconductor chip, thereby joining said posts to said metal layer through 25 metal-metal bonding.

30 11. A heat dissipation member made by a process comprising the steps of:

forming a resist on a substrate;

removing a portion or portions of said resist formed on the substrate in places where posts 35 are to be formed;

forming the posts on the substrate in said places where the resist is removed;

forming a joint material on the posts; and
removing the remaining resist on the
substrate.

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12. The heat dissipation member as claimed
in claim 11, wherein said step of forming the joint
10 material forms the joint material on the resist as
well as on the posts, and said step of removing the
remaining resist removes the resist on which the
joint material is formed.

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